

PCT09

RAW SEQUENCE LISTING  
PATENT APPLICATION: US/09/701,747

DATE: 09/05/2001  
TIME: 10:38:41

Input Set : A:\620-123.app  
Output Set: N:\CRF3\09052001\I701747.raw

4 <110> APPLICANT: Wood, John N  
5 England, Steven  
6 Chen, Chih C  
7 Akopian, Armen N  
9 <120> TITLE OF INVENTION: Ion channels  
11 <130> FILE REFERENCE: 620-123  
13 <140> CURRENT APPLICATION NUMBER: US 09/701,747  
C--> 14 <141> CURRENT FILING DATE: 2001-01-29  
16 <150> PRIOR APPLICATION NUMBER: PCT/GB99/01743  
17 <151> PRIOR FILING DATE: 1999-06-03  
19 <150> PRIOR APPLICATION NUMBER: GB 9811965.4  
20 <151> PRIOR FILING DATE: 1998-06-03  
22 <160> NUMBER OF SEQ ID NOS: 13  
24 <170> SOFTWARE: PatentIn Ver. 2.1  
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27 <211> LENGTH: 2622  
28 <212> TYPE: DNA  
29 <213> ORGANISM: Rattus norvegicus  
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32 <221> NAME/KEY: misc\_feature  
33 <222> LOCATION: 2139, 2203, 2253, 2313, 2316, 2428, 2482, 2516, 2532  
34 <223> OTHER INFORMATION: n is unknown  
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37 <221> NAME/KEY: misc\_feature  
38 <222> LOCATION: 2546, 2563, 2584, 2594  
39 <223> OTHER INFORMATION: n is unknown  
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44 gggagtgacg cccccacctc gggccccac cctgtcccca tcctcctcct ggttgccctg 180  
45 agtttagaag agcagccgct gccaccacca ccaactcggg gggcaccagg gctgctgtcc 240  
46 aggggaaggac agtagcagtg aggctctggc cagtcccagc agccggggac agatgccgat 300  
47 cgagattgtg tgcaaaatca aatttgctga ggaggatgca aaacccaagg agaaggaggc 360  
48 aggggatgag cagagcctcc tgggggctgc tcagggggcca gcagcccctc gggacctggc 420  
49 tacctttgcc agcaccagta ctctgcatgg gctgggcccgg gcctgtggcc caggccccca 480  
50 tggactgcgc agaaccctgt gggactggc cctactcacc tcaactggctg ctttctgta 540  
51 ccaggcagcc agcctggcca ggggctacct gaccgggctt cacttggtag ccatggacc 600  
52 tgctgccccca gcccagtg ggggctttcc ggctgtcacc ctctgcaaca tcaaccgctt 660  
53 ccggcattcg gcaactcagc atgctgatat. cttccacctg gccaatctga cagggtgccc 720  
54 ccccaaagac cgggatgggc accgtgcagc tggccttcgc taccagagc ctgacatggt 780  
55 agacatcctc aaccgcaactg gccaccagct tgctgacatg ctcaagagct gcaacttcag 840  
56 tgggcaccac tgctccgcca gcaacttctc tgtggtctat actcgctatg gaaagtgtta 900  
57 caccttcaat gcagatcctc agagttcact gccagcagg gcaggcggca tgggtagtgg 960  
58 cctggagatc atgctagaca tccagcagga ggaataccta cccatatgga gggagacaaa 1020  
59 tgagacatca ttcgaggcag ggatccgggt gcagatccac agccaggagg agcctcccta 1080  
60 catccaccag ctggggttcg gtgtgtcccc aggcttccag acttttgtgt cctgccagga 1140  
61 acagcggcta acttatctgc cccagccttg gggcaactgc cgggcggaaa gcaagctcag 1200

ENTERED

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62 ggagcctgag cttcagggct actcagccta tagtgtgtct gcctgccgac tgcgctgtga 1260  
63 gaaggaggcc gtgcttcagc gctgccactg ccggatggtg cacatgccag gcaatgagac 1320  
64 catctgcccg ccaaatatct acattgaatg tgccgaccac aactggact ccctgggtgg 1380  
65 gggctctgag ggcccatgct tctgccctac accctgcaac ctgactcgtt acggcaaaga 1440  
66 gatctccatg gtcaagatcc ccaacagggg ctctgccagg tacctggcga ggaagtacaa 1500  
67 ccgcaatgag acctacataa gggaaaactt cttggtcctg gatgtcttct ttgaggccct 1560  
68 aacctctgaa gccatggaac agcgagctgc ctatggtctg tcagccttgc tgggggacct 1620  
69 tgggggacag atgggcctgt tcattggggc tagcatcctc accttgctgg agatccttga 1680  
70 ctacatctat gaggtctcct gggatcgact caagaggggtg tggcgacggc ccaagacccc 1740  
71 acttaggacg tccactgggg gcatctccac tttggggctg caggaactga aggaacagag 1800  
72 tccctgtcca aatcgaggcc gtgctgaggg tgggtggggct agcaacctgc ttcccaacca 1860  
73 tcaccacccc cagggccccc caggaagcct ctttgaaaac tttgcttgct aggatggtgc 1920  
74 tgtgtgggga aagtacccat gaaaccccac actctcctat tcttgggaca gaaggtctgg 1980  
75 ggcagccocag ggctaaggga aggggtggtg ctactgaaa ggccaggact agggctcctgc 2040  
76 tctccctgac ctaggctcag ctgccttgca caagaatcct tcttgtccat actccctgct 2100  
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W-->83 ttcgtgggga gtgggtggaa anacctttca gaccttggct aagcttatgg ggagangggag 2520  
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W-->85 atcnagagac cccnagaaaa aaaaaaaaaa aaaaaaaaaa aa 2622  
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89 <211> LENGTH: 539  
90 <212> TYPE: PRT  
91 <213> ORGANISM: Rattus norvegicus  
93 <400> SEQUENCE: 2  
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95 1 5 10 15  
97 Lys Pro Lys Glu Lys Glu Ala Gly Asp Glu Gln Ser Leu Leu Gly Ala  
98 20 25 30  
100 Ala Gln Gly Pro Ala Ala Pro Arg Asp Leu Ala Thr Phe Ala Ser Thr  
101 35 40 45  
103 Ser Thr Leu His Gly Leu Gly Arg Ala Cys Gly Pro Gly Pro His Gly  
104 50 55 60  
106 Leu Arg Arg Thr Leu Trp Val Leu Ala Leu Leu Thr Ser Leu Ala Ala  
107 65 70 75 80  
109 Phe Leu Tyr Gln Ala Ala Ser Leu Ala Arg Gly Tyr Leu Thr Arg Pro  
110 85 90 95  
112 His Leu Val Ala Met Asp Pro Ala Ala Pro Ala Pro Val Ala Gly Phe  
113 100 105 110  
115 Pro Ala Val Thr Leu Cys Asn Ile Asn Arg Phe Arg His Ser Ala Leu  
116 115 120 125  
118 Ser Asp Ala Asp Ile Phe His Leu Ala Asn Leu Thr Gly Leu Pro Pro  
119 130 135 140  
121 Lys Asp Arg Asp Gly His Arg Ala Ala Gly Leu Arg Tyr Pro Glu Pro  
122 145 150 155 160

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124 Asp Met Val Asp Ile Leu Asn Arg Thr Gly His Gln Leu Ala Asp Met  
 125 165 170 175  
 127 Leu Lys Ser Cys Asn Phe Ser Gly His His Cys Ser Ala Ser Asn Phe  
 128 180 185 190  
 130 Ser Val Val Tyr Thr Arg Tyr Gly Lys Cys Tyr Thr Phe Asn Ala Asp  
 131 195 200 205  
 133 Pro Gln Ser Ser Leu Pro Ser Arg Ala Gly Gly Met Gly Ser Gly Leu  
 134 210 215 220  
 136 Glu Ile Met Leu Asp Ile Gln Gln Glu Glu Tyr Leu Pro Ile Trp Arg  
 137 225 230 235 240  
 139 Glu Thr Asn Glu Thr Ser Phe Glu Ala Gly Ile Arg Val Gln Ile His  
 140 245 250 255  
 142 Ser Gln Glu Glu Pro Pro Tyr Ile His Gln Leu Gly Phe Gly Val Ser  
 143 260 265 270  
 145 Pro Gly Phe Gln Thr Phe Val Ser Cys Gln Glu Gln Arg Leu Thr Tyr  
 146 275 280 285  
 148 Leu Pro Gln Pro Trp Gly Asn Cys Arg Ala Glu Ser Lys Leu Arg Glu  
 149 290 295 300  
 151 Pro Glu Leu Gln Gly Tyr Ser Ala Tyr Ser Val Ser Ala Cys Arg Leu  
 152 305 310 315 320  
 154 Arg Cys Glu Lys Glu Ala Val Leu Gln Arg Cys His Cys Arg Met Val  
 155 325 330 335  
 157 His Met Pro Gly Asn Glu Thr Ile Cys Pro Pro Asn Ile Tyr Ile Glu  
 158 340 345 350  
 160 Cys Ala Asp His Thr Leu Asp Ser Leu Gly Gly Gly Ser Glu Gly Pro  
 161 355 360 365  
 163 Cys Phe Cys Pro Thr Pro Cys Asn Leu Thr Arg Tyr Gly Lys Glu Ile  
 164 370 375 380  
 166 Ser Met Val Lys Ile Pro Asn Arg Gly Ser Ala Arg Tyr Leu Ala Arg  
 167 385 390 395 400  
 169 Lys Tyr Asn Arg Asn Glu Thr Tyr Ile Arg Glu Asn Phe Leu Val Leu  
 170 405 410 415  
 172 Asp Val Phe Phe Glu Ala Leu Thr Ser Glu Ala Met Glu Gln Arg Ala  
 173 420 425 430  
 175 Ala Tyr Gly Leu Ser Ala Leu Leu Gly Asp Leu Gly Gly Gln Met Gly  
 176 435 440 445  
 178 Leu Phe Ile Gly Ala Ser Ile Leu Thr Leu Leu Glu Ile Leu Asp Tyr  
 179 450 455 460  
 181 Ile Tyr Glu Val Ser Trp Asp Arg Leu Lys Arg Val Trp Arg Arg Pro  
 182 465 470 475 480  
 184 Lys Thr Pro Leu Arg Thr Ser Thr Gly Gly Ile Ser Thr Leu Gly Leu  
 185 485 490 495  
 187 Gln Glu Leu Lys Glu Gln Ser Pro Cys Pro Asn Arg Gly Arg Ala Glu  
 188 500 505 510  
 190 Gly Gly Gly Ala Ser Asn Leu Leu Pro Asn His His His Pro His Gly  
 191 515 520 525  
 193 Pro Pro Gly Ser Leu Phe Glu Asn Phe Ala Cys  
 194 530 535  
 198 <210> SEQ ID NO: 3

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199 <211> LENGTH: 526  
 200 <212> TYPE: PRT  
 201 <213> ORGANISM: Rattus norvegicus  
 203 <400> SEQUENCE: 3  
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 207 Ser Ile Gln Ala Phe Ala Ser Ser Ser Thr Leu His Gly Leu Ala His  
 208 20 25 30  
 210 Ile Phe Ser Tyr Glu Arg Leu Ser Leu Lys Arg Ala Leu Trp Ala Leu  
 211 35 40 45  
 213 Cys Phe Leu Gly Ser Leu Ala Val Leu Leu Cys Val Cys Thr Glu Arg  
 214 50 55 60  
 216 Val Gln Tyr Tyr Phe Cys Tyr His His Val Thr Lys Leu Asp Glu Val  
 217 65 70 75 80  
 219 Ala Ala Ser Gln Leu Thr Phe Pro Ala Val Thr Leu Cys Asn Leu Asn  
 220 85 90 95  
 222 Glu Phe Arg Phe Ser Gln Val Ser Lys Asn Asp Leu Tyr His Ala Gly  
 223 100 105 110  
 225 Glu Leu Leu Ala Leu Leu Asn Asn Arg Tyr Glu Ile Pro Asp Thr Gln  
 226 115 120 125  
 228 Met Ala Asp Glu Lys Gln Leu Glu Ile Leu Gln Asp Lys Ala Asn Phe  
 229 130 135 140  
 231 Arg Ser Phe Lys Pro Lys Pro Phe Asn Met Arg Glu Phe Tyr Asp Arg  
 232 145 150 155 160  
 234 Ala Gly His Asp Ile Arg Asp Met Leu Leu Ser Cys His Phe Arg Gly  
 235 165 170 175  
 237 Glu Ala Cys Ser Ala Glu Asp Phe Lys Val Val Phe Thr Arg Tyr Gly  
 238 180 185 190  
 240 Lys Cys Tyr Thr Phe Asn Ser Gly Gln Asp Gly Arg Pro Arg Leu Lys  
 241 195 200 205  
 243 Thr Met Lys Gly Gly Thr Gly Asn Gly Leu Glu Ile Met Leu Asp Ile  
 244 210 215 220  
 246 Gln Gln Asp Glu Tyr Leu Pro Val Trp Gly Glu Thr Asp Glu Thr Ser  
 247 225 230 235 240  
 249 Phe Glu Ala Gly Ile Lys Val Gln Ile His Ser Gln Asp Glu Pro Pro  
 250 245 250 255  
 252 Phe Ile Asp Gln Leu Gly Phe Gly Val Ala Pro Gly Phe Gln Thr Phe  
 253 260 265 270  
 255 Val Ser Cys Gln Glu Gln Arg Leu Ile Tyr Leu Pro Ser Pro Trp Gly  
 256 275 280 285  
 258 Thr Cys Asn Ala Val Thr Met Asp Ser Asp Phe Phe Asp Ser Tyr Ser  
 259 290 295 300  
 261 Ile Thr Ala Cys Arg Ile Asp Cys Glu Thr Arg Tyr Leu Val Glu Asn  
 262 305 310 315 320  
 264 Cys Asn Cys Arg Met Val His Met Pro Gly Asp Ala Pro Tyr Cys Thr  
 265 325 330 335  
 267 Pro Glu Gln Tyr Lys Glu Cys Ala Asp Pro Ala Leu Asp Phe Leu Val  
 268 340 345 350  
 270 Glu Lys Asp Gln Glu Tyr Cys Val Cys Glu Met Pro Cys Asn Leu Thr

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271 355 360 365  
273 Arg Tyr Gly Lys Glu Leu Ser Met Val Lys Ile Pro Ser Lys Ala Ser  
274 370 375 380  
276 Ala Lys Tyr Leu Ala Lys Lys Phe Asn Lys Ser Glu Gln Tyr Ile Gly  
277 385 390 395 400  
279 Glu Asn Ile Leu Val Leu Asp Ile Phe Phe Glu Val Leu Asn Tyr Glu  
280 405 410 415  
282 Thr Ile Glu Gln Lys Lys Ala Tyr Glu Ile Ala Gly Leu Leu Gly Asp  
283 420 425 430  
285 Ile Gly Gly Gln Met Gly Leu Phe Ile Gly Ala Ser Ile Leu Thr Val  
286 435 440 445  
288 Leu Glu Leu Phe Asp Tyr Ala Tyr Glu Val Ile Lys His Arg Leu Cys  
289 450 455 460  
291 Arg Arg Gly Lys Cys Gln Lys Glu Ala Lys Arg Ser Ser Ala Asp Lys  
292 465 470 475 480  
294 Gly Val Ala Leu Ser Leu Asp Asp Val Lys Arg His Asn Pro Cys Glu  
295 485 490 495  
297 Ser Leu Arg Gly His Pro Ala Gly Met Thr Tyr Ala Ala Asn Ile Leu  
298 500 505 510  
300 Pro His His Pro Ala Arg Gly Thr Phe Glu Asp Phe Thr Cys  
301 515 520 525  
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306 <211> LENGTH: 26  
307 <212> TYPE: DNA  
308 <213> ORGANISM: Rattus norvegicus  
310 <400> SEQUENCE: 4 26  
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316 <212> TYPE: DNA  
317 <213> ORGANISM: Rattus norvegicus  
319 <400> SEQUENCE: 5 25  
320 ccagaccttc tgtcccagga atagg  
323 <210> SEQ ID NO: 6  
324 <211> LENGTH: 25  
325 <212> TYPE: DNA  
326 <213> ORGANISM: Rattus norvegicus  
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333 <211> LENGTH: 25  
334 <212> TYPE: DNA  
335 <213> ORGANISM: Rattus norvegicus  
337 <400> SEQUENCE: 7 25  
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341 <210> SEQ ID NO: 8  
342 <211> LENGTH: 24  
343 <212> TYPE: DNA  
344 <213> ORGANISM: Rattus norvegicus

Use of n and / or Xaa has been detected in the  
Sequence Listing. Review the Sequence Listing  
to ensure a corresponding explanation is present  
in the <220> to <223> fields of each sequence  
using n or Xaa.

## VERIFICATION SUMMARY

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Input Set : A:\620-123.app

Output Set: N:\CRF3\09052001\I701747.raw

L:14 M:271 C: Current Filing Date differs, Replaced Current Filing Date  
L:77 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:1  
L:78 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:1  
L:79 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:1  
L:80 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:1  
L:82 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:1  
L:83 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:1  
L:84 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:1  
L:85 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:1  
L:352 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:8  
L:366 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:9  
L:385 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:10  
L:401 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:11

0901747.012901